

SRDS Report No. RD-69-22, VOL. ( 4 )

## FINAL REPORT

Contract No. FA-67-WAI-129

Project No. 197-641-01R

# CLIMATOLOGICAL SUMMARIES

VISIBILITIES BELOW 1/2 MILE  
AND CEILINGS BELOW 200 FEET

## VOLUME 4

INTERNATIONAL AIRPORT  
BIRMINGHAM, ALABAMA

JUNE 1969

This report has been approved for unlimited availability.

Prepared for  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
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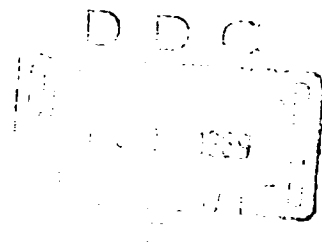
by

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Environmental Science Services Administration  
ENVIRONMENTAL DATA SERVICE  
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**JUNE 1969**

This report has been prepared by U.S. DEPARTMENT OF COMMERCE, Environmental Science Services Administration, Environmental Data Service, National Weather Records Center, Asheville, N.C. for the Systems Research and Development Service, Federal Aviation Administration, under Contract No. FA-67-WAI-129. The contents of this report reflect the views of the contractor, who is responsible for the facts and the accuracy of the data presented herein, and do not necessarily reflect the official views or policy of the FAA. This report does not constitute a standard, specification or regulation.

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PAGE

Each with four sections:

1. 0700-1359 Local Standard Time
2. 1400-2159 Local standard Time
3. 2200-0659 Local Standard Time
4. All Hours

XII	All conditions.	20
XIII	Temperature less than 33° F.	21
XIV	Temperature less than 33° F, with fog, no precipitation and winds of less than 9 knots.	22
XV	Temperature less than 33° F, with fog, no precipitation, and wind 9-12 knots.	23
XVI	Temperature less than 29° F.	24
XVII	Temperature less than 29° F, with fog, no precipitation and wind less than 9 knots.	25
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XX	Temperature less than 32° F, with fog, no precipitation and wind less than 9 knots.	28
XXI	Temperature 32° with fog, no precipitation and wind 9-12 knots.	29

## INTRODUCTION

The tables contained herein have been prepared and organized for use in evaluating the cost/benefits of all weather landing systems and fog dissipation techniques. Thus, the time intervals of duration of the categories of weather are significant in determining the times of the delay, diversion or cancellation of an aircraft flight resulting from a restricted weather category. This information together with the number and types of aircraft affected by the restricted weather and the costs of a delay, diversion or cancellation combine to provide the total costs resulting from the weather restrictions.

Climatological summaries have been prepared for 41 airports. Their location and associated volume numbers are listed in Table A.

## ENVIRONMENT AND INSTRUMENTATION

### BIRMINGHAM, ALABAMA INTERNATIONAL AIRPORT

The Birmingham International Airport is located at the southwestern tip of the Appalachian range at an elevation of about 610 feet above MSL. The terrain is characterized by a series of ridges and valleys oriented generally in a northeast-southwest direction, with the major ridges lying to the east and southeast of the airport.

The airport lies in a valley with ridges about 2 to 3 miles to the northwest and southeast rising 300 to 600 feet above the field. The valley in which the airport is located slopes gradually downward to the southwest into lower rolling country, but in all other directions the terrain is very irregular.

The tables in this publication are based on the 10-year period, January 1, 1956-December 31, 1965. Ceiling heights were measured by ceilometer throughout the period. Transmissometer (500 ft. baseline) was commissioned on runway 05 July 11, 1960. Location of the airport weather station, its elevation, and the height of wind instrumentation during the period were as follows:

<u>From</u>	<u>To</u>	<u>Lat. N.</u>	<u>Long. W.</u>	<u>Height of Wind Instrument Feet above ground</u>	<u>Station Elevation Feet above MSL.</u>
1- 1-56	6- 2-63	33° 34'	86° 45'	63	610
6- 2-63	8-25-65	33° 34'	86° 45'	22	610
8-26-65	12-31-65	33° 34'	86° 45'	22	620

## NATURE OF DATA

The data used in the preparation of the climatological tables were extracted from 10 years of WBAN 10-A forms from January 1956 through December 1965. There were two exceptions: The data for Dulles International covered the period January 1963 through December 1965 and for Kansas City-Mid-Continent the period July 1957 through December 1965. All data (Record, Special, Local, Check observations)\* were recorded on punched cards to the hour and minute whenever a change occurred in the ceiling, surface visibility, present weather, runway visual range or runway visibility during the time the ceiling was less than 200 feet and/or the surface visibility was less than 1/2 mile. The observation which ended a category of the above conditions was punched and if this observation was not a Record observation, the next Record observation was punched. The elements transcribed were: the time in hours and minutes, ceiling, surface visibility, tower visibility, present weather, temperature, dew-point, surface wind, altimeter setting and remarks concerning runway visual range and runway visibility.

These data should prove to be a valuable source for additional studies where low visibilities are considered.

Runway visual range (RVR) is the operational weather criteria for airport landing systems. The limits of visibility conditions for categories of aircraft operations are presented in Table B. Only Cat. II criteria are currently operational. Because RVR as such, is not available on a uniform basis for the station and period of record under study, visibilities and ceilings were used for delineating categories of weather minimums for landing and take-off operations. The determination of RVR would require:

1. The light setting of the edge lights,
2. the background lighting,
3. the location with respect to runway,
4. a special analyzer to integrate the transmissiometer readings etc.

This information has not often been recorded with the transmissiometer data.

\* Except Kansas City - Mid-Continent. Only Record (hourly) observations were taken during the period of record at this station; 16 hours per day (0700-2200) through November 1957 and 24 hours per day December 1957 through December 1965.



## EXPLANATION OF TABLES

All the tables of climatological summaries except Table I are based on the reported visibilities of less than 1/2 mile and/or ceilings less than 200 feet.

The tables of climatological summaries in these publications include:

- (1) reported visibility and ceiling values versus time intervals of duration.
- (2) weather categories of aircraft landing systems based on their relationship to ceiling and visibility as presented in Table C, versus intervals of duration. This is Table X only.
- (3) percentage frequency of wind direction versus wind speed for each category of aircraft landing system using the relationship of Table C for Record observations only. These are presented for 13 stations only. This is Table XI only.\*
- (4) weather categories of landing systems based on their relationship to ceilings and visibility as presented in Table E, versus intervals of duration. These tables are also summarized on the basis of wind speed and temperature values.

\* These stations are:

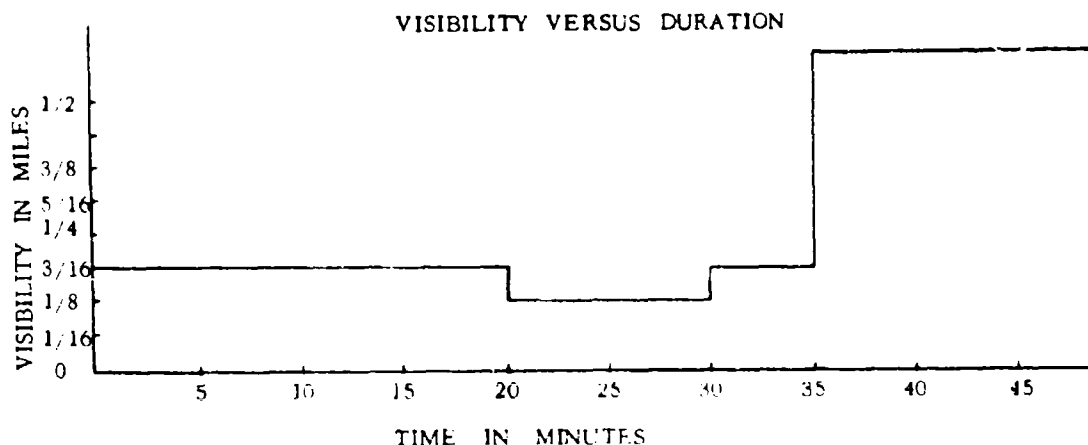
Los Angeles International, Oakland International, Chicago O'Hare, San Francisco International, Greater Buffalo International, Washington National, Washington Dulles International, Atlanta, Newark, New York J. F. K., Philadelphia International, New York La Guardia, Cleveland Hopkins International

## REPORTED VISIBILITY AND CEILING VALUES VERSUS INTERVALS OF DURATION

Nine summaries are presented. In Tables I - V the values represent the individual incidents of specified ceiling and visibility. Thus, in Table III  $3/8$  mile visibility with 100 ft. ceiling occurs with a specific frequency for each interval of duration.

In Tables VI to IX, the frequency of occurrence represents visibilities for specific conditions of ceilings at or below the listed visibility. They are cumulative incidents wherein the total time at or below a certain visibility value for the ceiling value specified is considered as one incident. Thus, if in Table VII there are 172 incidents of  $3/8$  mile in the interval of 1-15 minutes, it represents 172 times during the 10-year period that visibilities  $3/8$  mile or less with ceilings 100 feet.

Another example which combines the entries in the individual and the cumulative tables is as follows: If visibility is distributed as shown in the figure, for ceiling 100 feet, if for 20 minutes the visibility was  $3/16$  then went to  $1/8$  for 10 minutes, then went to  $3/16$  for 5 minutes and then to greater than  $1/2$  mile visibility in Table III there would be 2 counts for  $3/16$ , one under 16-30 minutes and one under 1-15 minutes; and one count for  $1/8$  under 1-15 minutes; whereas, in the cumulative table for visibilities at or below a given visibility with 100-foot ceilings - Table VII in the  $3/8$ ,  $5/16$ ,  $1/4$  and  $3/16$  mile categories there would be one count under 31-45 minutes (actually 35 minutes) and one count in  $1/8$  mile category under 1-15 minutes (actually 10 minutes).



To estimate the total time of occurrence for a particular interval of time for the period of record one multiplies the average of time period by the frequency of occurrence of the specified conditions for this time period. Thus, if visibility of 3/8 mile with ceiling 100 feet (Table III) occurred 14 times between 16-30 minutes, the estimated total time would be 14 x 23 or 322 minutes.

#### WEATHER CATEGORIES OF AIRCRAFT LANDING SYSTEMS VERSUS INTERVALS OF DURATION BASED ON TABLE D

A single table (Table X) based on Table C for the period of record is presented. Table C is based on the current practices relating RVR to meteorological visibilities as shown in Table D.

Table X is in three sections:

Xa. Frequency of occurrence of the landing categories versus the indicated duration intervals:

In this summary Categories II, IIIa, IIIB, and IIIC are represented by the frequency of these conditions occurring during the specified intervals.

In Category II + III the frequency represents the visibilities and ceilings at or below Category II weather, i. e., below 200 feet and/or 1/2 mile for a continuous period of time.

In Category III, the number of occurrences represent the frequency the weather was in in Category IIIa and IIIB/c i.e., observation below 1/4 mile and equal to and above 1/4 mile when the ceiling is reported as zero for a continuous period of time.

Xb. Total time in each duration versus the duration intervals in hours and tenths of hours. The entries in this table are arrived by adding the times in minutes associated with the frequencies above. These totals are converted to hours and tenths. This table also contains the percentage of time for the 10-year period of observations of specified duration intervals, i. e., 1-90, 91-all, 1-all. This table is derived by dividing the total time under each category for the specified duration interval by the total number of hours. Thus the percentage value for Category II + III the 1-all group (last column, 4th value down) represents the frequency of occurrence for the ten-year period in percent of visibility and ceilings below 1/2 mile and/or 200 feet.

Xc. Average time in each duration versus the duration intervals.

This table is derived by dividing the total time in minutes of each item in Table Xb by the frequency of occurrence in Table Xa.

#### WIND DIRECTION VERSUS SPEED BY PERCENTAGE FREQUENCY (Table XI)

Table XI (for 13 stations) (unnumbered on summaries) show the percentage distribution of the different categories in accordance with Table D by wind direction to 16 points versus specified speed intervals. These categories, II, IIIa and IIIB/c, are divided into 2100-0500 and 0600-2000 hour groups making a total of six sub-tables.

Only the hourly (Record) observations when Category II or below conditions exist are used in these summaries. The percentages are determined by dividing the number of hourly observations which were recorded during the entire period of record for the indicated hour group. The percentage figures can be combined to obtain percentages for the quadrants of different speed intervals.

#### WEATHER CATEGORIES OF LANDING SYSTEMS VERSUS INTERVALS OF DURATION BASED ON TABLE E

Nine tables XII - XXI are presented for the ten-year period. These tables are presented in three sections:

a. Frequency of occurrences of landing categories versus duration intervals:

Categories II, IIIa, IIIb, and IIIc are represented by the total time for the specified hour group that these conditions occur during the indicated intervals.

In Categories II + III the frequency represents the visibilities and ceilings at or below Category II weather e. g., below 2400 RVR. In Category III the frequency represents the visibilities at or below Category III weather e. g., below 1200 RVR.

b. Total time in each duration versus the duration intervals hours and tenths,

The entries in this table are derived by adding the time in minutes associated with the frequency above and converting them to hours and tenths.

c. Average time in each duration versus the duration intervals.

This table is derived by dividing the total time in minutes of each value in b by the corresponding frequency of occurrence in a.

In these tables, since the period of duration is the important element, each incident of weather is attributed to the hour group during which it began. Thus, if Category IIIa weather began in the 22-06 hour group and continued into the 07-13 hour group the total time is placed in the 22-06 group. It is probable, then, that the incidence of the various categories may be over-estimated in the 22-06 group. The totals appearing in the all hour group, however, are correct.

The sum of Categories IIIa, IIIb, and IIIc in the all-hour groups and sometimes in the other hour groups are frequently greater than under Cat. III. This results from the addition of 5% of observations of 3/16 mile or greater with ceiling 100 feet added to Cat. IIIa, whereas, this 5% is not included in the Cat. III totals at the bottom of each table.

The difference between Cat. III totals and the sum of Cat. IIIa, IIIb, and IIIc are subtracted from the Cat. II totals for the all-hour group and appears at the end of the Cat. II line with an asterisk. This value is a better estimate of the occurrence of Cat. II weather for the 10-year period.

## EXPLANATION OF TABLE E

The relationship of RVR with light setting 5 for a 500' baseline to the meteorological report of visibility, based on the information in Circular N<sup>1</sup>/, is given in Table F. This was the basis for establishing the relationships in Table E. The use of the highest setting for the edge lights for approaches in low visibility is the current operational practice. Although the selection of some of the relationships in Table E have been somewhat arbitrary, it can be expected that the observers report of low visibilities and ceilings will be more inexact than the cut off point of these relationships.

<sup>1</sup>/ Manual of Surface Observations (WBAN). Circular N, Weather Bureau, Washington, D. C. NAVAIR 501D503, July 1968 (AD672-366)

## ACKNOWLEDGEMENTS

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This is one of 41 volumes of Report RD-69-22. The volumes are as follows:

<u>VOL.</u>	<u>CITY</u>	<u>AIRPORT</u>
1.	Anchorage, Alaska	International
2.	Atlanta, Georgia	Atlanta
3.	Baltimore, Maryland	Friendship International
4.	Birmingham, Alabama	International
5.	Boston, Massachusetts	General E. L. Logan International
6.	Buffalo, New York	Greater Buffalo International
7.	Burbank, California	Hollywood-Burbank
8.	Chicago, Illinois	O'Hare International
9.	Cincinnati, Ohio	Greater Cincinnati
10.	Cleveland, Ohio	Cleveland-Hopkins International
11.	Columbus, Ohio	Port Columbus International
12.	Dallas, Texas	Love Field
13.	Dayton, Ohio	James M. Cox Municipal
14.	Denver, Colorado	Stapleton International
15.	Detroit, Michigan	Detroit Metropolitan-Wayne County
16.	Hartford, Connecticut	Bradley International (Windsor Locks)
17.	Houston, Texas	William P. Hobby
18.	Indianapolis, Indiana	Weir Cook
19.	Kansas City, Missouri	Mid-Continent International
20.	Los Angeles, California	International
21.	Louisville, Kentucky	Standiford Field
22.	Miami, Florida	International
23.	Milwaukee, Wisconsin	General Mitchell Field
24.	Minneapolis, Minnesota	Minneapolis-St. Paul International
25.	Nashville, Tennessee	Metropolitan
26.	Newark, New Jersey	Newark
27.	New Orleans, Louisiana	International
28.	New York, New York	John F. Kennedy International
29.	New York, New York	La Guardia
30.	Oakland, California	Metropolitan Oakland International
31.	Philadelphia, Pennsylvania	International
32.	Pittsburgh, Pennsylvania	Greater Pittsburgh International
33.	Portland, Oregon	International
34.	Rochester, New York	Rochester-Monroe County
35.	St. Louis, Missouri	Lambert-St. Louis Municipal
36.	Salt Lake City, Utah	Municipal No. 1
37.	San Francisco, California	International
38.	Seattle, Washington	Seattle-Tacoma International
39.	Syracuse, New York	Clarence E. Hancock
40.	Washington, D. C.	Dulles International
41.	Washington, D. C.	National

TABLE A

#### LIMITS OF LANDING CATEGORIES

- \* CAT. II Operations down to minima below 200 feet decision height and 2400 RVR and to as low as 100 feet decision height and 1200 RVR.
- \*\* CAT. IIIA Below 100 feet decision height and 1200 RVR and to as low as 50 feet decision height and 700 RVR.
- \*\* CAT. IIIB Below 700 RVR to 150 RVR.
- \*\* CAT. IIIC No external visual reference.

#### TABLE B

- \* Current operational criteria
- \*\* Criteria not firm, used for planning purposes

CEILING AND VISIBILITY EQUIVALENTS FOR CATEGORIES  
OF AIRCRAFT LANDING OPERATIONS CURRENT PRACTICE  
CRITERIA for Table X and XI

Category II:	Visibility = 1/2 and ceiling = 100
	Visibility = 3/8 and ceiling $\neq$ 0
	Visibility = 5/16 and ceiling $\neq$ 0
	Visibility = 1/4 and ceiling $\neq$ 0
Category III-a:	Visibility = 1/4 and ceiling = 0
	Visibility = 3/16 and all ceilings
	Visibility = 1/8 and all ceilings
Category III-b/c:	Visibility = 1/16 and all ceilings
	Visibility = 0 and all ceilings
Category III:	The sum of IIIa, IIIb, and IIIc

TABLE C



RVR VERSUS VISIBILITY (Current Practice)

METEOROLOGICAL VISIBILITY	RVR EQUIVALENT
Statute Miles (feet)	Feet
3/16 (990 feet)	1200
• 1/4 (1320 feet)	1600
• 1/2 (2640 feet)	2400

TABLE D

- United States Standard for Terminal Instrument Procedures (TERPs), Federal Aviation Agency, September 1966.

CEILING AND VISIBILITY EQUIVALENTS FOR  
CATEGORIES OF AIRCRAFT LANDING OPERATIONS  
Criteria for Tables XII-XXI

Category II  
Below 2400 ft. RVR to  
1200 ft. RVR

Equivalent Meteorological Observations

All observations with visibilities greater than  
3/8 mile with ceiling 100 feet.

All observations of 3/8 mile with ceiling not  
equal to zero.

All observations of 5/16 mile with ceiling not  
equal to zero.

All observations of 1/4 mile with ceiling not  
equal to zero.

All observations of 3/16 mile with ceiling not  
equal to zero.

Category III  
Category IIIa  
Below 1200 ft. RVR to  
700 ft. RVR

All observations of 1/8 mile.

All observations of 3/16 mile or greater with  
zero ceiling.

5% of observations of 3/16 mile or greater with  
ceiling 100.

Category IIIb  
Below 700 ft. RVR to  
150 ft. RVR

All observations of 1/16 mile.

50% of all observations of zero miles.

Category IIIc  
Below 150 ft. RVR

50% of observations of zero miles.

TABLE E

# RVR VERSUS METEOROLOGICAL VISIBILITY

## Circular N

Reported Meteorological Visibilities Miles (feet)	RVR (500 ft. baseline) at Setting 5		Category
	Day	Night	
0 (less than 330 feet)	*	*	(IIIc and IIId)
1/16 (330 feet-650 feet)	*	*	(IIId)
1/8 (660 feet-980 feet)	1000-1400	*	(IIId and IIIa)
3/16 (990 feet-1310 feet)	1400-1800	1200-1800	(Cat. II)
1/4 (1320 feet-1640 feet)	1800-2200	1800-2200	(Cat. II)

\* No determination of RVR with respect to meteorological visibility.

TABLE F

14-514-1-100, INTER-STATE-200  
FREQUENCY OF INTERVALS OF DURATION AT EACH CATEGORY OF VISIBILITY JANUARY 1960 - DECEMBER 1965

TABLE I. VISIBILITY 1/2 MILE WHEN CEILING < 200 FEET.

DURATION IN MINUTES											
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	
5	32	33	20	11	9	10	1				

TABLE II. (IRRESPECTIVE OF CEILING).

DURATION IN MINUTES											
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	
5/8	9	6	1	2	1						
5/16											
1/4	62	26	6	14	10	6	2	1	1		
1/8	13	11	12	3	4	2		2	1		
1/16	8	6	4	2	1	3	2	2	2		
0	4	6	1	1	6	3	3	2	2	1	

TABLE III. (CEILING 100 FEET).

DURATION IN MINUTES											
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	
5/8	2	2			1						
5/16											
1/4	14	9	4	3	3	1	2	1			
1/8	5	6	4	1	1		1				
1/16	2	1	1	1					1		
0	1	1		1	1	1					

TABLE IV. (CEILING ZERO).

DURATION IN MINUTES											
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	
5/8	1			1							
5/16											
1/4	20	8	1	1	7	1	1				
1/8	9	4	1	1	1	2		1	1		
1/16	7	1	1	1	1	1	2				
0	4	2	3	2	3	4	1	1	1	1	

TABLE V. (CEILING 100 FEET OR ZERO).

DURATION IN MINUTES											
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	
5/8	2	1	1	1	1						
5/16											
1/4	25	12	7	7	9	3	3	1			
1/8	12	8	7	2	2	2	1	1	1		
1/16	7	3	2	1	1	1	2		1		
0	5	2	2	3	3	4	3	1	1	1	

TOTAL TIME AT OR BELOW EACH VISIBILITY CLASSIFIED AS ONE INCIDENT

TABLE VI. (IRRESPECTIVE OF CEILING).

DURATION IN MINUTES											
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	
5/8	44	19	4	13	17	15	10	4	10	2	1
5/16	41	16	6	14	16	13	10	4	10	2	1
1/4	41	16	6	14	16	13	10	4	10	2	1
1/8	12	7	8	3	10	9	5	3	4	2	1
1/16	12	7	8	3	10	9	5	3	4	2	1
0	4	5	1	1	6	3	3	2	2	1	1

TOTAL TIME AT OR BELOW EACH VISIBILITY CLASSIFIED AS ONE INCIDENT

TABLE VII. (CEILING 100 FEET).

DURATION IN MINUTES											
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	
5/8	17	10	10	4	6	2	4	1	1		
5/16	15	8	10	4	7	2	4	1	1		
1/4	15	8	10	4	7	2	4	1	1		
1/8	6	5	5	2	3		2				
1/16	2	1	2	2	1		1		1		
0	1	1		1	1		1				

TOTAL TIME AT OR BELOW EACH VISIBILITY CLASSIFIED AS ONE INCIDENT

TABLE VIII. (CEILING ZERO).

DURATION IN MINUTES											
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	
5/8	21	7	6	1	11	9	4	3	2	2	1
5/16	21	7	6	1	10	9	4	3	2	2	1
1/4	21	7	6	1	10	9	4	3	2	2	1
1/8	13	4	5	2	4	6	2	2	1	2	1
1/16	13	4	5	2	4	6	2	2	1	2	1
0	4	2	3	2	4	5	2	2	1	1	1

TOTAL TIME AT OR BELOW EACH VISIBILITY CLASSIFIED AS ONE INCIDENT

TABLE IX. (CEILING 100 FEET OR ZERO).

DURATION IN MINUTES											
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	
5/8	22	6	10	6	16	12	10	3	4	2	1
5/16	21	8	10	6	15	11	10	3	4	2	1
1/4	21	8	10	6	15	11	10	3	4	2	1
1/8	10	2	10	4	7	7	5	2	2	2	1
1/16	10	2	10	4	7	7	5	2	2	2	1
0	4	1	6	4	3	4	4	2	2	1	1

TABLE X

BIRMINGHAM, INTERNATIONAL

ALL SEASONS

ALL HOURS

JANUARY 1958 - DECEMBER 1965

## FREQUENCY OF OCCURRENCE

CATEGORY	TIME IN MINUTES										481+	1-90	91-ALL	1-ALL	PERCENTAGE	
	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480					1-90	91-ALL
II	84	54	35	20	18	10	2	3	1			211	16	227		
IIIA	31	20	19	3	9	3	7	1	4			82	15	97		
IIIB/C	9	8	3	1	8	7	5		6		1	29	19	48		
II + III	52	32	29	16	21	20	19	8	12	4	2	150	65	215		
III	24	14	14	6	14	10	7	3	11	1	2	72	34	106		

## TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY	TIME IN MINUTES										1-90	91-ALL	1-ALL	PERCENTAGE		
	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480				1-90	91-ALL	1-ALL
II	14.8	21.7	23.4	18.0	23.2	17.4	4.3	9.5	4.3		101.0	35.4	136.4	.12	.04	.16
IIIA	5.9	7.9	12.7	2.7	11.7	5.6	17.0	3.2	20.0		40.9	43.7	84.6	.05	.05	.10
IIIB/C	1.7	3.2	1.7	1.0	10.2	11.9	11.6		27.7		12.7	17.9	30.6	.02	.07	.09
II + III	9.0	13.1	19.6	14.0	26.4	34.7	47.1	27.5	61.6	29.2	22.7	82.0	222.8	.09	.25	.35
III	4.8	5.5	9.5	5.4	17.7	17.4	16.4	10.1	53.5	6.8	21.3	42.9	125.5	.05	.14	.19

## AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY	TIME IN MINUTES										1-90	91-ALL	1-ALL	PERCENTAGE		
	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480				1-90	91-ALL	1-ALL
II	10.5	24.1	40.1	54.0	77.3	104.2	129.3	189.3	256.0		28.7	132.8	36.1			
IIIA	11.3	23.8	40.2	53.7	78.2	111.0	145.4	189.0	300.3		29.9	182.7	53.6			
IIIB/C	11.4	24.1	34.7	40.0	76.6	102.0	139.6		276.7		744.0	37.0	201.9	102.3		
II + III	10.3	24.6	40.5	52.4	75.4	104.2	148.6	206.5	308.0	437.3	681.5	32.8	205.7	85.1		
III	12.1	23.4	40.8	53.5	76.0	104.6	140.1	202.0	291.9	406.0	640.0	35.8	221.5	95.3		

TOTAL OBSERVATION HOURS 87672

BIRMINGHAM, INTERNATIONAL

NO WIND TABLES FOR THIS STATION

TABLE VIII - TEMPERATURE < 33 DEGREES (F), BIRMINGHAM, INTERNATIONAL  
0700 - 1300 (29971 OBSERVATION HOURS) JANUARY 1956 - DECEMBER 1965

FREQUENCY OF OCCURRENCE		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II					1							2		2
IIIA		1				1						2		2
IIIB		1				1						2		2
IIIC														
II + III	1				1							2		2
III														

TOTAL TIME IN EACH DURATION HOURS AND TENTHS		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II		.3			1.1							1.3		1.3
IIIA		.3			1.1							1.3		1.3
IIIB														
IIIC														
II + III	.3				1.1							1.3		1.3
III														

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II		15.0			63.0							39.0		39.0
IIIA		15.0			63.0							39.0		39.0
IIIB														
IIIC														
II + III	15.0				63.0							39.0		39.0
III														

FREQUENCY OF OCCURRENCE		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II		3										3		3
IIIA		3	2									5		5
IIIB														
IIIC														
II + III		1				1						1	1	2
III		2	2									4		4

TOTAL TIME IN EACH DURATION HOURS AND TENTHS		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II		1.1										1.1		1.1
IIIA		1.1	1.4									2.4		2.4
IIIB														
IIIC														
II + III		.3				2.9						.3	2.9	3.1
III		.7	1.4									2.1		2.1

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II		21.0										21.0		21.0
IIIA		21.9	41.0									29.2		29.2
IIIB														
IIIC														
II + III	16.0					172.0						16.0	172.0	94.0
III		21.9	41.0									31.3		31.3

FREQUENCY OF OCCURRENCE		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II		1			1							1		1
IIIA		1	1									3		3
IIIB														
IIIC							1						1	1
II + III	1					1	1					1	2	3
III		1			1		1					2	1	3

TOTAL TIME IN EACH DURATION HOURS AND TENTHS		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II		.3	.4		1.5							.4		.4
IIIA		.3	.4		1.5							2.1		2.1
IIIB														
IIIC							3.0						3.0	3.0
II + III	.3				1.8		3.0					.3	4.8	5.1
III	.3				1.5		3.0					1.7	3.0	4.7

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II		22.0										22.0		22.0
IIIA		15.0	22.0		88.0							41.7		41.7
IIIB														
IIIC							180.0						180.0	180.0
II + III	15.0				88.0	110.0	180.0					15.0	145.0	101.7
III		15.0					180.0					31.3	180.0	94.3

FREQUENCY OF OCCURRENCE		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II		2	4		1							6		6
IIIA		2	3	2	2							9		9
IIIB														
IIIC							1						1	1
II + III	2	1			1	1	2					4	3	7
III	1	2	2		1		1					6	1	7

TOTAL TIME IN EACH DURATION HOURS AND TENTHS		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II		.3	1.4		1.1							2.7		2.7
IIIA		.5	1.1	1.4	2.5							5.2		5.2
IIIB														
IIIC							3.0						3.0	3.0
II + III	.5	.3			1.1	1.8	3.9					1.8	7.7	9.5
III	.3	.7	1.4		1.5		3.0					3.8	3.0	6.8

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II		15.0	21.3		63.0							27.2		27.2
IIIA		15.0	21.3	41.0	75.5							34.3		34.3
IIIB														
IIIC							180.0						180.0	180.0
II + III	15.0	16.0			63.0	110.0	178.0					27.3	194.0	81.6
III		15.0	21.3	41.0	75.5		180.0					38.0	180.0	58.3

BIRMINGHAM, INTERNATIONAL  
TABLE XIV - TEMPERATURE < 33 DEGREES (F.), WITH FOG, NO PRECIPITATION, AND WIND < 9 KNOTS.  
0700 - 1700 (23971 OBSERVATION HOURS) JANUARY 1956 - DECEMBER 1965

FREQUENCY OF OCCURRENCE											
TIME IN MINUTES											
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+
II					1						1
IIIA					1						1
IIIB											1
IIIC											1
II + III					1						1
III											1
TOTAL TIME IN EACH DURATION HOURS AND TENTHS											
TIME IN MINUTES											
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+
II					1.1						1.1
IIIA					1.1						1.1
IIIB											1.1
IIIC											1.1
II + III					1.1						1.1
III											1.1
AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS											
TIME IN MINUTES											
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+
II					63.0						63.0
IIIA					63.0						63.0
IIIB											63.0
IIIC											63.0
II + III					63.0						63.0
III											63.0

1400 - 2100 (29224 OBSERVATION HOURS)

NO OCCURRENCE OF DATA

FREQUENCY OF OCCURRENCE											
TIME IN MINUTES											
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+
II					1						1
IIIA					1						1
IIIB											1
IIIC											1
II + III					1						1
III											1
TOTAL TIME IN EACH DURATION HOURS AND TENTHS											
TIME IN MINUTES											
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+
II					.4						.4
IIIA					.4						.4
IIIB					1.5						2.1
IIIC											3.0
II + III					.9		1.8				5.1
III					.3		3.0				4.7
AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS											
TIME IN MINUTES											
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+
II					22.0						22.0
IIIA					19.0						41.7
IIIB											180.0
IIIC											180.0
II + III					19.0		110.0				19.0
III					19.0		180.0				91.9
FREQUENCY OF OCCURRENCE											
TIME IN MINUTES											
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+
II					1						2
IIIA					1						4
IIIB											1
IIIC											1
II + III					1		1				4
III					1		1				3
TOTAL TIME IN EACH DURATION HOURS AND TENTHS											
TIME IN MINUTES											
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+
II					.4						1.4
IIIA					.4						3.2
IIIB					2.9						3.0
IIIC											3.0
II + III					.9		1.1				6.1
III					.3		1.5				4.7
AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS											
TIME IN MINUTES											
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+
II					22.0						42.3
IIIA					19.0						67.3
IIIB											180.0
IIIC											180.0
II + III					19.0		63.0				39.0
III					19.0		180.0				91.9



BIRMINGHAM, INTERNATIONAL  
TABLE XV - TEMPERATURE < 33 DEGREES (F), WITH FOG, NO PRECIPITATION, AND WIND 9-12 KNOTS.  
JANUARY 1956 - DECEMBER 1965

NO OCCURRENCE OF DATA

TABLE XVI - TEMPERATURE < 29 DEGREES (F),  
BIRMINGHAM, INTERNATIONAL

JANUARY 1956 - DECEMBER 1965

NO OCCURRENCE OF DATA

BIRMINGHAM, INTERNATIONAL  
TABLE XVII - TEMPERATURE < 29 DEGREES (F), WITH 800, NO PRECIPITATION, AND WIND < 9 KNOTS,  
JANUARY 1950 - DECEMBER 1969

NO OCCURRENCE OF DATA

1

BIRMINGHAM, INTERNATIONAL  
TABLE 4111 - TEMPERATURE < 20 DEGREES F, WITH FOG, NO PRECIPITATION, AND WIND 0-12 KNOTS,  
JANUARY 1990 - DECEMBER 1995

NO OCCURRENCE OR DATA

TABLE XX - TEMPERATURE (IN DEGREES FAH) WITH 1000 WT PRECIPITATIONS AND WIND < 9 MPH (U.S.).  
 1400 - 2100 (29224 OBSERVATION HOURS) JANUARY 1946 - DECEMBER 1965

		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	12	4	2	1	1							20		20
IIIA	4	5	3									13		13
IIIB	1	2	1									4		4
IIIC		1				1						1	1	2
II + III	4	2	2		2		1					10	1	11
III	2	3	2									7	1	8

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	1.9	1.6	1.3	.8	1.1							8.6		8.6
IIIA	.7	2.1	2.1		1.1							9.2		9.2
IIIB	.2	.7	.5									1.5		1.5
IIIC		.4				1.9						.4	1.9	2.3
II + III	.7	.8	1.5		2.1		2.1					5.1	2.1	7.2
III	.5	1.3	1.5			1.9						3.2	1.9	5.1

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	9.3	23.8	38.0	48.0	65.0							19.8		19.8
IIIA	10.5	25.4	42.0		65.0							24.2		24.2
IIIB	14.0	19.5	17.0									22.5		22.5
IIIC		25.0				114.0						25.0	114.0	69.5
II + III	10.5	23.4	44.0		63.0		127.0					30.3	127.0	39.1
III	14.0	25.3	44.0			114.0						27.4	114.0	38.3

FREQUENCY OF OCCURRENCE 1400 - 2100 (29224 OBSERVATION HOURS)

		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	2	2	2									6	1	7
IIIA	1	4	1				1					6	1	7
IIIB		1										1		1
IIIC		1										1	1	2
II + III	1	2	2		1			1		1	1	6	2	8
III		2			1						1	3	1	4

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	.2	.6	1.3									2.1	3.2	5.3
IIIA	.1	1.6	.7				3.0		3.2			2.5	3.0	4.7
IIIB			.6									.6		.6
IIIC		.4								7.8		.4	7.8	8.2
II + III	.1	.8	1.3		1.1			3.2			9.0	3.3	12.2	15.5
III		.8			1.0						8.3	1.8	8.3	10.1

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	7.0	16.5	39.0									20.8	192.0	45.3
IIIA	6.0	24.3	39.0				180.0		192.0			24.8	180.0	40.0
IIIB			34.0									34.0		34.0
IIIC		23.0								470.0		23.0	470.0	246.5
II + III	6.0	23.0	39.0		67.0			192.0			940.0	32.8	360.0	116.1
III		22.5			62.0						900.0	35.7	500.0	151.8

FREQUENCY OF OCCURRENCE 2200 - 0400 (32877 OBSERVATION HOURS)

		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	34	35	13	13	9	8	2	1	1			104	12	116
IIIA	16	9	15	7	6	7	5	2	4			93	13	66
IIIB	6	5	2	2	1	4	3	1	3			18	11	29
IIIC		3	1	1	1	2	2	1	1			8	6	14
II + III	14	20	16	13	11	16	13	3	19	2	1	77	48	125
III		6	9	8	9	7	4	3	11	1	1	38	27	65

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	6.9	14.0	8.6	11.4	11.9	17.8	5.1	3.1	4.3			52.6	26.2	78.8
IIIA	3.2	3.3	10.0	6.5	7.5	3.3	12.8	6.6	18.8			29.6	40.1	66.5
IIIB	1.2	2.1	1.3	2.0	3.8	6.6	6.8	3.8	13.2			10.3	29.6	39.1
IIIC		1.2	.6	1.0	3.7	3.6	4.8	3.8	4.5			6.4	17.6	24.7
II + III	3.1	8.1	10.6	11.4	18.1	27.4	33.2	17.7	65.9	14.4	8.6	51.3	158.8	210.1
III	1.5	2.3	6.1	7.3	11.2	11.7	9.6	10.1	32.3	6.8	8.1	28.4	98.5	126.9

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	12.1	23.9	39.6	52.4	79.0	101.1	153.4	189.0	256.0			30.3	130.9	40.8
IIIA	11.9	21.7	39.8	55.7	75.0	94.7	153.0	197.0	281.5			33.5	185.2	60.4
IIIB	11.7	24.6	39.5	50.0	75.1	94.8	134.3	230.0	283.7			34.3	161.5	80.9
IIIC		24.0	39.0	60.0	73.6	108.1	144.3	229.5	268.5			48.4	175.6	106.2
II + III	13.3	24.2	39.8	52.6	77.7	102.7	153.2	194.3	302.9	431.0	516.0	40.0	198.5	100.8
III	14.8	23.3	40.6	54.8	74.4	100.1	143.5	202.0	287.1	406.0	486.0	44.8	218.9	117.1

FREQUENCY OF OCCURRENCE ALL (47672 OBSERVATION HOURS)

		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	48	41	17	14	10	8	2	2	1			170	13	143
IIIA	20	16	17	7	6	2	5	2	4			66	13	79
IIIB	7	8	4	2	3	5	3	1	3			24	12	36
IIIC		4	1	1	3	2	2	1	1		1	9	7	16
II + III	19	24	20	13	17	14	14	4	13	2	2	93	51	144
III	8	11	11	8	10	9	4	3	11	1	2	48	29	77

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	8.9	10.1	11.2	12.2	12.9	13.9	5.1	6.3	4.3			61.3	29.4	90.7
IIIA	3.9	6.2	11.4	6.5	7.5	3.3	12.9	6.6	18.8			35.0	40.4	72.0
IIIB	1.4	3.1	2.5	2.0	3.8	6.5	6.8	3.8	13.2			12.9	34.1	46.1
IIIC		1.6	.6	1.0	3.7	3.7	4.8	3.8	4.5	7.8		6.8	22.8	30.4
II + III	3.9	9.6	13.4	11.4	21.4	27.4	35.3	17.9	65.9	14.4	17.6	59.6	173.1	232.8
III	2.0	4.4	7.6	7.3	12.2	13.4	9.6	10.1	32.3	6.8	16.4	33.4	108.8	142.1

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	11.2	23.6	39.4	52.1	77.6	103.1	151.5	187.5	254.0			28.3	135.6	38.0
IIIA	11.7	23.3	40.3	55.7	74.8	98.0	156.6	197.0	281.5			31.8	186.4	74.7
IIIB	12.0	23.8	37.5	60.0	75.7	101.4	136.3	235.0	281.5			32.3	170.7	76.8
IIIC		24.0	39.0	60.0	75.7	101.4	136.3	235.0	281.5	479.0		44.9	195.0	114.2
II + III	12.3	24.0	40.2	52.6	75.4	102.7	151.4	197.8	302.9	431.0	528.0	38.5	203.7	97.0
III	14.6	23.7	41.2	54.8	71.0	102.1	141.5	207.0	289.1	404.7	493.0	41.7	225.0	110.7

## TABLE VII - TEMPERATURE - 32 DEGREES (F) - BIRMINGHAM, INTERNATIONAL

FREQUENCY OF OCCURRENCE 1400 - 2100 (29224 OBSERVATION HOURS)

JANUARY 1966 - DECEMBER 1965

CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	23	7	4	2	3	1						39	1	40
IIIA	7	5	2	1	2	1	1					17	2	19
IIIB	3	3	1									7		7
IIIC	1	1				1						2	1	3
II + III	14	4	2		5	2	1					25	3	28
III	7	2	1	1	1	1	1					12	2	14

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	3.9	3.0	2.7	1.8	3.0	1.8						15.0	1.8	16.8
IIIA	1.2	2.2	1.4	1.0	2.4	1.8	2.1					7.1	3.9	10.1
IIIB	.6	1.2	.5									2.5		2.5
IIIC	.2	.4				1.9						.5	1.9	2.0
II + III	2.7	1.6	1.4		5.8	3.8	2.1					11.5	5.9	17.5
III	1.5	.9	.7	1.0	1.3	1.9	2.1					5.3	4.0	7.4

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	10.2	25.0	40.0	54.0	71.7	109.0						23.0	109.0	25.2
IIIA	10.6	26.2	41.0	57.0	71.0	109.0	127.0					25.1	118.0	31.9
IIIB	12.7	23.0	37.0									21.3		24.9
IIIC	10.0	25.0				114.0						15.0	114.0	39.8
II + III	11.5	24.0	44.0	69.2	74.5	127.0						27.6	118.7	37.4
III	13.0	25.5	39.0	60.0	75.0	114.0	127.0					26.7	120.5	40.1

FREQUENCY OF OCCURRENCE 1400 - 2100 (29224 OBSERVATION HOURS)

CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	21	5	5	1								32	1	33
IIIA	5	5	3	1			1					15	1	16
IIIB	1	1	1									2		2
IIIC	1	1										2	1	3
II + III	23	5	4	2	2							36	2	38
III	7	2	2	1								13	1	14

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	3.0	1.9	3.0	1.0								8.9	3.2	12.1
IIIA	1.0	2.1	2.0	1.0			3.0					5.5	3.0	8.6
IIIB	.1		.6									.8		2.7
IIIC	.1	.4										.4	7.8	8.4
II + III	3.4	2.1	2.4	1.8	2.6		3.2					9.0	12.2	24.5
III	1.1	1.2	1.4	1.0								8.3	4.7	13.0

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	8.6	22.6	36.2	60.0								16.7	192.0	22.0
IIIA	10.0	25.2	40.3	60.0			180.0					22.1	180.0	24.7
IIIB	7.0		34.0									23.0		80.5
IIIC	6.5	23.0								470.0		12.0	470.0	176.5
II + III	8.7	25.2	36.0	55.0	77.0		192.0					20.4	368.0	38.6
III	4.0	23.3	42.5		42.0					500.0		21.5	500.0	55.7

FREQUENCY OF OCCURRENCE 2200 - 0400 (32877 OBSERVATION HOURS)

CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	39	38	20	17	14	9	2	2	1			134	14	148
IIIA	21	11	15	4	8	4	7	2	4			59	17	76
IIIB	6	5	2	2	4	4	3	1	3			19	11	30
IIIC	2	2	1	1	3	2	2	1	1			7	6	13
II + III	14	22	23	14	13	17	18	7	12	4		86	59	145
III	10	7	9	5	11	10	8	3	11	1		42	32	74

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	7.6	15.4	17.7	15.2	18.6	15.6	4.7	6.3	4.3			74.4	30.4	104.8
IIIA	4.2	4.2	9.9	3.6	10.1	7.3	17.0	6.5	20.0			31.3	50.0	78.0
IIIB	1.4	2.0	1.2	2.0	5.2	4.4	6.8	3.8	13.7			11.5	29.6	41.3
IIIC	.8	.8	.6	1.0	3.8	3.6	4.8	3.8	4.9			6.2	17.6	23.6
II + III	2.7	9.1	15.7	12.2	16.8	29.1	44.2	24.3	61.6	29.2		86.6	197.0	253.4
III	2.3	2.7	6.0	4.4	13.7	17.4	14.2	10.1	39.9	6.8		8.1	29.1	110.2

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	11.7	24.3	40.9	53.6	74.6	101.7	129.5	188.0	256.0			33.3	130.3	42.5
IIIA	12.0	22.7	34.6	33.8	75.6	104.8	145.9	195.0	300.3			31.8	176.5	61.6
IIIB	11.7	24.2	34.5	40.0	71.5	94.8	136.3	230.0	263.7			36.4	161.5	82.7
IIIC	22.5	33.0	60.0	76.3	108.3	144.3	224.5	269.4				39.4	175.6	109.0
II + III	11.5	24.9	41.0	52.1	77.4	102.6	147.3	208.6	304.0	437.3		516.0	394.2	104.9
III	13.6	23.4	40.1	52.2	74.9	104.6	147.3	202.0	291.9	406.0		41.6	208.5	112.9

FREQUENCY OF OCCURRENCE 401 (17672 OBSERVATION HOURS)

CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	83	40	35	22	17	10	2	3	1			205	18	221
IIIA	13	20	19	4	4	4	4	2	4			85	18	103
IIIB	10	9	4	2	4	3	3	1	3			29	12	41
IIIC	2	3	1	1	1	2	2	1	1	1		10	7	17
II + III	51	31	24	16	20	19	19	8	12	4		2	147	84
III	24	12	12	6	13	11	7	3	11	1		2	47	55

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	14.5	20.2	23.4	18.0	22.2	17.4	4.7	9.5	4.7			98.3	35.4	133.7
IIIA	6.3	8.0	12.7	3.6	11.3	7.3	19.4	6.5	20.0			41.5	52.2	90.5
IIIB	1.9	3.6	2.5	2.0	5.2	4.4	6.8	3.8	13.2			15.2	34.1	49.9
IIIC	.3	1.2	.6	1.0	3.8	3.7	4.8	3.8	4.9	7.8		6.7	22.8	28.9
II + III	8.7	12.8	19.6	14.0	25.1	32.9	44.3	27.5	61.6	29.2		17.6	80.2	215.1
III	4.8	4.8	8.2	5.4	16.0	19.3	14.4	10.1	53.5	6.8		16.4	39.1	141.6

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	13.5	24.3	40.1	54.0	78.2	104.2	129.5	189.3	256.0			28.8	132.8	36.3
IIIA	11.4	24.1	40.1	54.0	75.4	104.8	145.5	195.0	300.3			29.3	174.1	52.7
IIIB	11.4	23.7	37.5	40.0	71.5	101.4	136.3	230.0	263.7			31.5	170.7	73.0
IIIC	8.3	23.0	33.0	40.0	76.3	109.8	144.3	224.5	269.4	470.0		40.1	195.0	104.1
II + III	12.1	24.8	40.5	52.4	75.3	105.9	146.3	206.3	304.0	437.3		52.8	201.7	84.0
III	12.1	23.8	40.8	53.5	74.9	105.3	146.1	207.0	291.9	406.0		49.0	210.0	95.1

TABLE 4-1 - TEMPERATURES IN DEGREES FAHRENHEIT WITH FOG, NO PRECIPITATION, AND WIND 9-12 KNOTS.  
 1772 - 1900 (23571 OBSERVATION HOURS) JANUARY 1966 - DECEMBER 1965

FREQUENCY OF OCCURRENCE		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	1	3										4		4
IIIA	1	2										3		3
IIIB	1											1		1
IIIC														
II + III	2	4										6		6
III	1	1										2		2

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY		TIME IN MINUTES												
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL	
II	.3	1.3									1.6		1.6	
IIIA	.3	.8									1.1		1.1	
IIIB	.2										.2		.2	
IIIC														
II + III	.5	1.7									2.1		2.1	
III	.2	.3									.6		.6	

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY		TIME IN MINUTES												
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL	
II	15.0	26.3									23.5		23.5	
IIIA	15.0	23.0									22.7		22.7	
IIIB	14.0										14.0		14.0	
IIIC														
II + III	14.5	24.8									21.3		21.3	
III	14.0	20.0									17.0		17.0	

1400 - 2100 (29224 OBSERVATION HOURS)

FREQUENCY OF OCCURRENCE		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	2											2		2
IIIA	1											1		1
IIIB														
IIIC														
II + III	2											2		2
III														

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY		TIME IN MINUTES												
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL	
II	.3										.3		.3	
IIIA	.2										.2		.2	
IIIB														
IIIC														
II + III	.3										.3		.3	
III														

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY		TIME IN MINUTES												
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL	
II	10.0										10.0		10.0	
IIIA	10.0										10.0		10.0	
IIIB														
IIIC														
II + III	10.0										10.0		10.0	
III														

2200 - 0400 (32877 OBSERVATION HOURS)

FREQUENCY OF OCCURRENCE		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	2	2	3									7		7
IIIA	3	2	1									6		6
IIIB														
IIIC														
II + III	4	1	4									10		10
III	2	1	1									4		4

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY		TIME IN MINUTES												
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL	
II	.4	.8	2.2								3.4		3.4	
IIIA	.7	.8	.7								2.4		2.4	
IIIB														
IIIC														
II + III	.4	.5	2.9								1.0		1.0	
III	.5	.4	1.5								5.3		5.3	

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY		TIME IN MINUTES												
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL	
II	12.0	24.5	43.3								29.0		29.0	
IIIA	14.0	24.5	43.0								23.5		23.5	
IIIB														
IIIC														
II + III	13.5	28.0	43.8								60.0		60.0	
III	15.0	24.0									31.7		31.7	

ALL (17672 OBSERVATION HOURS)

FREQUENCY OF OCCURRENCE		TIME IN MINUTES												
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	5	5	3									13		13
IIIA	3	3	1									7		7
IIIB	1											1		1
IIIC														
II + III	8	5	4									18		18
III	1	2	1									6		6

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY		TIME IN MINUTES												
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL	
II	1.0	2.1	2.2								5.3		5.3	4.28
IIIA	.7	1.2	.7								2.4		2.4	
IIIB	.2										.2		.2	
IIIC														
II + III	1.7	2.1	2.9								7.8		7.8	
III	.7	.7	1.0								2.5		2.5	

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY		TIME IN MINUTES												
1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL	
II	11.8	25.0	43.3								24.4		24.4	
IIIA	14.0	23.3	43.0								20.9		20.9	
IIIB	14.0										14.0		14.0	
IIIC											60.0		60.0	
II + III	12.9	25.4	43.8								25.8		25.8	
III	14.7	22.0									24.7		24.7	